Indonesian Journal of Education, Social Sciences and Research (IJSSR)
Vol. 6, No. 1, March 2025, pp. 23-28

DEVELOPMENT OF SIMPLE PROMOTIONAL TOOLS BASED ON RECYCLING ON THE BLOOD CIRCULATORY SYSTEM MATERIAL IN ELEMENTARY SCHOOLS

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ABSTRACT

This study aiming for develop tool props simple based on recycle repeat. Type study that is research and development (R&D). This study using the 4D development model consists of from define, design, develop and disseminate (Thiagarajan., 1974). This research only up to the development stage. This research implemented at SD IT Bintang Langkat. Subject study that is student class V consisting of 25 students. Object study that is tool props simple based on recycle repeat. The data collection technique is observation, interviews, tests, and questionnaires. Data analysis techniques used namely (a) eligibility book story illustrated, and (b) effectiveness book story illustrated. Based on results study known that tool props simple based on recycle redeveloped declared very worthy, thing this based on results validation by experts material that is with percentage 87.50%, result validation by experts Language with percentage of 79.35% stated worthy, and results validation by media experts with the percentage of 90.68% was declared very feasible. From the results recapitulation said, it was concluded that tool props simple based on recycle repeat declared very worthy for used on students fifth grade at Bintang Langkat IT Elementary School.

Keyword : Simple demonstration tools, recycling, circulatory system

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1. INTRODUCTION

One of challenge in learning Knowledge Nature (science) at the level school base that is convey material that is complex and abstract, such as system circulation blood in humans. This material need reasoning logical as well as ability visualization, which is often difficult achieved without adequate learning media assistance. In the learning process, the use of media or tool visual aids are very important for help student understand abstract concept become more real. Especially in learning knowledge biology, such as material system circulation blood, students often difficulty imagine how blood flow in body, the function of related organs, and how the process Work in a way systematically. In development tool props simple visualizing the circulation process blood be one of alternative solution for increase understanding students (Mawusi., 2017). Based on results observation and interview with the fifth grade teacher at one of the IS Bintang Langkat Elementary Schools, it was discovered : (1) that material system circulation blood classified as difficult understood student because nature abstract and less visualized with, (2) the teacher conveys that availability tool props still limited and general only in the form of pictures in books , (3) lack of concrete and interesting learning media in explain material system circulation blood in school basic, so that student experience difficulty in understand concept of nature abstract, and (4) limitations tool teaching aids available at school, (5) lack of utilization material recycle repeat as a learning medium become constraint in create effective and friendly learning environment. From the findings problems at school said, eat researcher will give wrong One solution for finish problem the that is with develop tool props simple. Teaching aids simple is *tool help learning made with utilise materials avai*lable in the environment around, with objective f*or support the learning process to be more interesting and easy understood by students* (Suwarna, 2015).

Teaching aids simple can made with utilise things simple as it is around school, even goods used even though (Widyaningsih & Yusuf., (2015). Rohani (2004) stated excess tool props simple namely (1) costs cheap and easy made, (2) improve creativity of teachers and students , (3) helps student understand draft abstract in a way concrete , and (4) grow interest study students. Besides have excess tool props simple also has lack namely (1) limitations in representation material tyang complex , (2) requires time for manufacture , (3) no durable, and (4) sometimes not enough interesting if no designed with good (Sadiman, 2010). In development tool props simple can done with utilise material recycle repeat. The previous ingredients considered waste, such as bottle used, water hoses, cardboard, etc. closed bottle, it turns out can changed become a useful learning medium. The approach this no only press cost production tool display, but also encourage student for own awareness to importance guard environment through activity recycling repeat goods used (Boca & Saracli ., 2019). Props simple based on recycle repeat for material system circulation blood usually designed for show track circulation blood large (systemic) and circulation blood small (pulmonary).

This media can made such that form of flow blood shown use fluid colored can flow through the path that has been made from hose or small pipe. Source pressure can made use pump hand simple or tool inject big for push fluid, so that describe work pumping heart blood. Through tool props this, students can see direct how blood flow from heart to lungs, back to heart, then streamed to all over body, and back again to heart. Visualization this of course give experience learn more concrete compared to only read from book or watching videos (Phillips et al., 2010). Students are also more active involved because tool this allow learning based on practice directly, which is in line with approach learning active (Abdul et al., 2011). Development tool props based on recycle repeat also gives mark plus from aspect education character. Students no only taught about knowledge knowledge, but also invited for more care to environment (Jones et al., 2000). In addition that, skill think creative and problem solving students participate develop moment they involved in the process of making tool props this (Sari et al., 2018). For example, in choose material what can used, how put it together to fit with the concept you want displayed, until test whether tool the functioning with good. In in its application, teachers can make project making tool props this as part from task group or project learning. With existence task this will give room for student for work same, innovate, and study in a way collaborative (Delgano et al., 2020). In fact, the activities like this can made into as form implementation curriculum independence that encourages student for study through experience direct and project real. It was developed tool props simple from material recycle repeat for material system circulation blood is effort creative that is not only help student in understand material in a way more easy, but also supportive movement friendly environment and grow values positive in self students. Teachers as facilitator learning plays a very important role important in designing, guiding, and direct student in the process of manufacture and use tool props (Goodyear & Dudley., 2015). Based on description above, researcher interested for do research entitled " Development of Teaching Aids " Simple Based on Cycle Repeat for Material System Blood Circulation in Elementary Schools.

2. RESEARCH METHOD

Type study is research and development (R&D). Study development (R&D) is research that has a development process product new or develop products that have been there is and can accountable (Sukmadinata (2016:163). This research using the 4D development model. The development model used is a 4D development model. The 4D development model is define, design, develop and disseminate (Thiagarajan., 1974). This research only up to the development stage. This research implemented at SD IT Bintang Langkat. Subject study that is student class V consisting of 25 students. Object study that is tool props simple based on recycle repeat. The data collection technique is observation, interviews, tests, and questionnaires. Data analysis techniques used namely (a) eligibility book story illustrated, and (b) effectiveness book story illustrated. This research use scale Likert namely strongly agree (SS), agree (S), disagree (S), agree (ST), and strongly disagree agree (STS) (Mawardi ., 2019). The formula used researcher for validate tool props simple based on recycle repeat as following :

$$NP = \frac{R}{SM} x\ 100\%$$ (Lubis et al., 2023)

For know worthy or whether or not tool props simple based on recycle repeat can seen from table under this :

Table 1. Criteria Percentage

Range Percentage	Criteria
81% - 100%	Very Worth It
61% - 80%	Worthy

41% - 60%	Enough Worthy
21% - 40%	Less Worthy
<20%	Absolutely not Worthy

(Rahmawati et al., 2025)

3. RESULTS AND DISCUSSION

Development tool props simple based on recycle repeat this use approach the 4d model was developed by Thiagarajan, Semmel, and Semmel. This model consists of from four stages main : define, design, develop, and disseminate. However, in study this only used until stage development. Here this explanation every stages carried out in research as following :

1. Stage Definition

   Initial step in development process is identify need learning and problems faced in the field. Analysis this done for understand condition current in school basic, especially in convey material system circulation blood. Many students experience difficulty understand material this because its abstract and non -material nature can observed in a way directly. At the stage this researcher do a number of analysis as following :

   a. Analysis need students, teachers, and environment study
   b. Analysis curriculum, in particular objective related learning with system circulation blood at elementary school level
   c. Analysis task, namely to study ability what only one must owned student for understand draft system circulation blood in a way comprehensive
   d. Result of stage this become base in to design tool appropriate props needs, practical used, and supports objective learning.

2. Stage Design

   At the stage this, design tool props start arranged. Design made with consider convenience usage, security, and availability ingredients easy marks found around environment school or house students. Tool design props adjusted to be able to visualize the circulation process blood man in a way simple however still accurate in a way concept. At the stage this , researcher do a number of as following :

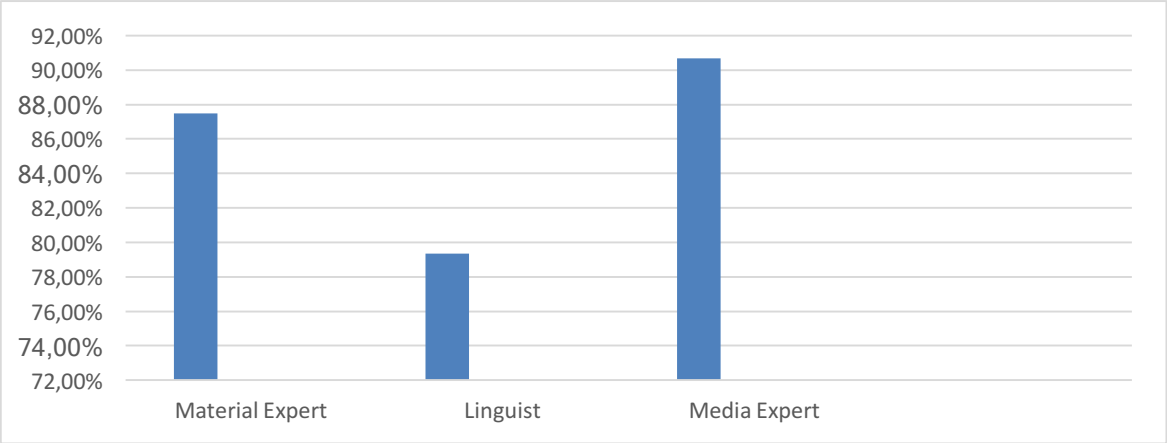
   a. Making sketches and designs technical tool props, including the path that represents vessels blood as well as symbol heart and lungs.
   b. Election material recycle repeat, like bottle plastic used, hose small, dye food, and cardboard .
   c. Planning procedure usage, so that the tool can operated in a way interactive and easy understood student.
   d. This design become reference in making prototype at stage furthermore.

3. Stage Development

   After design tool props simple based on recycle repeat finished designed, stage next that is develop and realize tool props simple based on recycle repeat the in form physical. Prototype tool props simple based on recycle repeat made based on design that has been arranged before, then done validation by experts for ensure that tool the worthy used in learning. Validation product will conducted by expert lecturers in his field, namely expert material, expert language and media expert. Validation carried out by experts to tool props simple based on recycle aiming for to perfect products developed to be feasible used in accordance with revise and insert those provided by experts. Following results validation that has been done researcher can seen in the table under this :

Table 2. Recapitulation Results Validation of Props Simple Based on Cycle Repeat

No	Validation	Percentage	Criteria
1	Material Expert	87.50%	Very Worth it
2	Linguist	79.35%	Worthy
3	Media Expert	90.68%	Very Worth it



Picture 1. Recapitulation results validation of props simple based on cycle repeat

Based on results recapitulation validation contained in table 2 above , it is known that tool props simple based on recycle redeveloped declared very worthy, thing this based on results validation by experts material that is with percentage 87.50%, result validation by experts language with percentage 79.35% stated worthy, and results validation by media experts with the percentage of 90.68% was declared very feasible. From the results recapitulation said, it was concluded that tool props simple based on recycle repeat declared very worthy for used on students fifth grade at Bintang Langkat IT Elementary School. Learning at the level school base demand a creative, fun and easy approach understood by participants educate. Challenges that often faced by teachers is convey scientific materials that are abstract or complex, such as system circulation blood in humans (Rogers., 2024). In matter this, development tool props simple that utilizes goods used become solution effective and applicable which can support the learning process teach. Utilization of learning media shaped tool props functioning as bridge between draft theoretical with reality that can observed directly by students (Ally., 2004). With see and practice in a way direct How system circulation blood work, students will more easy understand channel as well as function of the organs involved, e.g heart, lungs, and blood vessels blood. For example, with show track circulation blood through hose or small pipe, students can to obtain description about how blood flow from heart going to lungs, then to all over body. Props no need expensive materials. Goods used like bottle plastic, cardboard, straw, rubber bracelet, or used injection plastic can used for compile a system that resembles channel circulation blood human. With approach this, learning no only become more economical, but also teaches student about importance recycle recycling and preservation environment since early. Students no only study about science, but also gain values character like concern environment, creativity and work the same team (Roussou et al., 2025).

Activity making tool props can also be integrated in learning based on project based learning that encourages student for active and involved in the process of creating learning media themselves (Chanlin., 2008). When students involved directly, they no only understand material more deep, but also feel own not quite enough answer to results his work. This is in line with Schultz (2017) saying Spirit curriculum independence that prioritizes contextual and student - centered learning. Development tool props from material recycle repeat at school the basics also help teachers in explain material in a way more effective. No all student own style learn the same there is more easy understand with visualization or practice direct compared to with purely verbal explanation (Jacobson., 2001). Therefore that the presence of media such as this is very supportive creation inclusive and fun learning. In general overall, development tool props simple based on material used for material system circulation blood no only functioning as a teaching aid media, but also to be means education environment and strengthening character students. On the other hand, teachers are also motivated for more innovative in convey material. With more learning interactive and applicable, expected understanding student to scientific concepts, especially system circulation blood, will increase in a way significant (Azevedo et al., 2008). Based on results and Discussion the research above, then can concluded that tool props simple based on recycle repeat for material system circulation blood worthy for used in the learning process.

4. CONCLUSION

Result of study this show that tool props simple made from ingredients recycle repeat can become an effective learning media in convey material system circulation blood at level school basic. This media makes

it very easy student in understand draft through a real and attractive appearance, so that student capable reduce abstraction material. Besides that, utilization waste as material main tool props simple also provides contribution positive to learning specifically environment. Based on results study known that tool props simple based on recycle redeveloped declared very worthy, thing this based on results validation by experts material that is with percentage 87.50%, result validation by experts language with percentage 79.35% stated worthy, and results validation by media experts with The percentage of 90.68% was declared very feasible. From the results recapitulation said, it was concluded that tool props simple based on recycle repeat declared very worthy for used on students fifth grade at Bintang Langkat IT Elementary School.

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